



MASB 21-89

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Swimmer Detection Sonar

Background. It is widely accepted that many strategically important naval and commercial harbors can be at considerable risk from covert attack. The Plessey Swimmer Detection Sonar is designed to counter the threat of terrorism and sabotage, offering comprehensive protection to naval bases, commercial ports, and other economically vital assets such as offshore oil platforms and nuclear power stations.

The system. To counter the threat, Plessey has developed a sonar system which will continuously detect, classify, and track intruders at ranges that permit successful interception. According to Plessey, the system offers a more extensive detection range than any other known system and has demonstrated a consistently successful standard of performance under all types of environmental conditions. The system can be configured either as a fixed system or in a mobile form which allows rapid deployment at different locations as the threat demands.

Operation. The system is advertised to be fully automatic, so that when a target is detected, a series of detection, classification, and tracking algorithms are initiated prior to an alarm being activated. This level of interaction with the possible intruder provides very low false alarm rates. The autodetection process is programmable to meet the requirements of target threat versus environmental conditions. Having confirmed the presence of an intruder, the system will predict its track and estimate the time of interception. Using the sonar beam, the operator can direct a police launch or similar craft fitted with a transponder, to a position immediately above the intruder.

Sensors. The Plessey Swimmer Detection Sonar uses a mirror array as the sensor. The array provides near-perfect beamforming with a minimal number of components, in a robust, low-cost configuration. The fixed installation comprises a 150° plastic sonar mirror providing, when scanned continuously, an azimuth resolution of 1° over the total field of view (see Figure 1). The trainable mobile installation has a 30° azimuthal field of view. The electronically scanned sonar heads have no moving parts, thus ensuring high reliability and ease of maintenance.

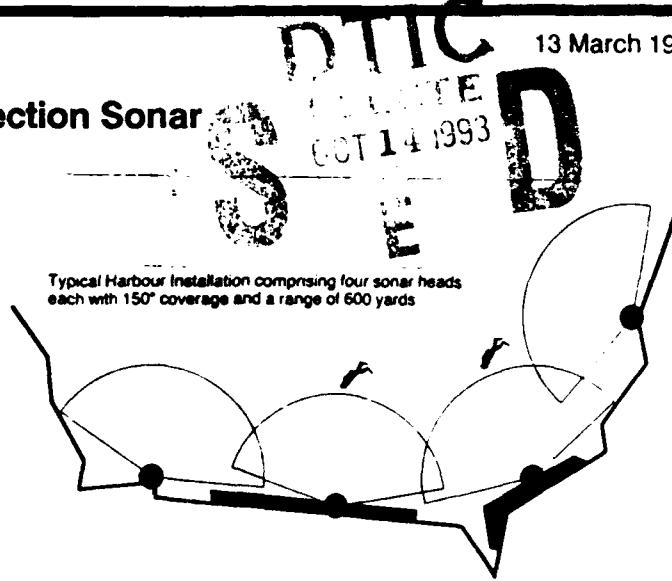


Figure 1. The Plessey system.

Display. The display console uses advanced raster scanning techniques to present highly detailed information on any intruders in the area under surveillance. The console has two 20-inch color monitors, a tactical surveillance display which includes a traffic history and record facility, and a tactical interrogation display with facilities for target engagement and disposal/recovery guidance. When integrated with other sonars and radar systems, a comprehensive in-depth intruder detection ensemble is possible. Appropriate displays are then provided for all sensors in the system, enabling the operators to gain a detailed picture of the developing threat and permitting effective action to be taken.

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